

ABSTRACT

A radio frequency communication system utilizing a radiating transmission line for communicating data signals is disclosed. The data signals convey digital data to remotely located data devices, including computers, equipment control systems and digital video cameras. The data signals have a wide bandwidth of about 0.5 MHz to 32 MHz. In this way, the communication system creates a local area network by means of the radiating communication line. The communication system is intended to be used in environments where radio waves do not propagate well, such as in underground environments, and in particular mines. The communication system comprises at least one amplifier connected to the radiating transmission line for periodically amplifying the data signals by demodulating the data signals to recover the data contained therein and then modulating the recovered data into a regenerated radio frequency at a power level permitting transmission and radiation of the regenerated radio frequency data signal. The regeneration amplifiers comprise a processor for temporarily storing and performing error detection and correction functions on the recovered data. The regeneration amplifiers also comprise a device for tracking the data devices within the coverage area of the regeneration amplifier. Information regarding the data devices within the coverage area of each regeneration amplifier is sent to a system server of the communication system and the system server utilizes this information to account for delays caused by the regeneration amplifier. The communication system may support cable modem protocols such as DOCSIS.